

Comparisons of Job Characteristics

Focus Occupation: [Chemical Technicians \(19-4031\)](#)
Associated Occupation: [Materials Scientists \(19-2032\)](#)

[Compare Knowledge](#)
[Compare Skills](#)
[Compare Abilities](#)
[Compare Detailed Work Activities](#)
[Compare Tools and Technologies](#)

<<	Focus occupation element is much lower
<	Focus occupation element is lower
0	Focus occupation element is at a similar level
>	Focus occupation element is at a higher level
>>	Focus occupation element is at a much higher level

Knowledge

Similarity of Focus Occupation to Associated Occupation: 86

Focus Occupation: Chemical Technicians (19-4031)
Associated Occupation: Materials Scientists (19-2032)

Associated Occupation's Key Knowledge Elements	Average Rating, All Occupations	Associated Occupation's Rating	Focus Occupation's Rating		Evaluation of Focus Occupation
Chemistry	4.8	23.3	18.6	<<	Extensive education and/or training may be required
Engineering and Technology	5.7	16.2	10.2	<<	Extensive education and/or training may be required
Mathematics	9.2	15.5	14.6	0	Current knowledge level may be sufficient
Administration and Management	8.4	13.3	3.9	<<	Extensive education and/or training may be required
Production and Processing	6.0	11.8	8.5	<<	Extensive education and/or training may be required
Physics	4.3	9.6	9.6	0	Current knowledge level may be sufficient

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Skills

Similarity of Focus Occupation to Associated Occupation: 82

Focus Occupation: Chemical Technicians (19-4031)
Associated Occupation: Materials Scientists (19-2032)

Associated Occupation's Key Skills Elements	Average Rating, All Occupations	Associated Occupation's Rating	Focus Occupation's Rating		Evaluation of Focus Occupation
Science	4.5	16.8	13.8	<	A higher skill level may be required
Reading Comprehension	10.7	14.6	12.8	<	A higher skill level may be required
Critical Thinking	10.8	13.8	11.8	<	A higher skill level may be required
Complex Problem Solving	9.1	12.0	9.3	<<	Extensive development of skills in this area may be required
Operations Analysis	5.0	11.7	6.8	<<	Extensive development of skills in this area may be required

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Abilities		Similarity of Focus Occupation to Associated Occupation: 88			
Focus Occupation: Chemical Technicians (19-4031) Associated Occupation: Materials Scientists (19-2032)					
Associated Occupation's Key Abilities Elements	Average Rating, All Occupations	Associated Occupation's Rating	Focus Occupation's Rating	Evaluation of Focus Occupation	
Oral Expression	12.4	15.4	11.2	<<	Extensive improvement in abilities may be required
Oral Comprehension	12.5	15.3	12.2	<	Some improvement in abilities may be required
Written Comprehension	11.0	14.2	13.5	0	Current ability level may be sufficient
Inductive Reasoning	10.2	14.1	12.8	<	Some improvement in abilities may be required
Deductive Reasoning	10.6	13.8	12.8	0	Current ability level may be sufficient
Problem Sensitivity	11.1	13.5	11.4	<	Some improvement in abilities may be required
Written Expression	9.8	13.4	12.0	<	Some improvement in abilities may be required
Originality	7.6	12.4	7.7	<<	Extensive improvement in abilities may be required
Category Flexibility	9.0	11.9	11.6	0	Current ability level may be sufficient
Flexibility of Closure	7.8	10.6	8.4	<	Some improvement in abilities may be required
Mathematical Reasoning	6.3	10.3	8.8	<	Some improvement in abilities may be required

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Activities that Both Occupations Have in Common		Similarity of Focus Occupation to Associated Occupation: 88
Focus Occupation: Chemical Technicians (19-4031) Associated Occupation: Materials Scientists (19-2032)		
Work Activities	Exclusivity of Activity	
Adhere to safety procedures	12	
Analyze chemical experimental, test, or analysis data or findings	69	
Analyze scientific research data or investigative findings	27	
Collect scientific or technical data	30	
Collect statistical data	47	
Communicate technical information	4	
Conduct laboratory research or experiments	57	
Conduct standardized qualitative laboratory analyses	62	

Conduct standardized quantitative laboratory analyses	62
Develop or maintain databases	30
Develop plans for programs or projects	31
Develop tables depicting data	33
Direct and coordinate activities of workers or staff	3
Explain complex mathematical information	30
Follow safe waste disposal procedures	50
Maintain records, reports, or files	5
Perform statistical analysis in physical science or geological research	71
Prepare reports	8
Prepare technical reports or related documentation	22
Record test results, test procedures, or inspection data	48
Use chemical processing emergency procedures	84
Use chemical testing or analysis procedures	54
Use computers to enter, access or retrieve data	3
Use hazardous materials information	35
Use knowledge of investigation techniques	16
Use laboratory equipment	60
Use mathematical or statistical methods to identify or analyze problems	30
Use physical science research techniques	68
Use quantitative research methods	35
Use relational database software	26
Use scientific research methodology	21
Use spreadsheet software	18
Use word processing or desktop publishing software	17

Not all positions in these occupations will necessarily perform all of the listed activities. The exclusivity rating is an indication of how unique the activity is amongst all occupations. The maximum rating is 100. High scores indicate that only a small number of occupations engage in that activity.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Tools and Technologies that Both Occupations Have in Common

Similarity of Focus
Occupation to Associated
Occupation: 68

Focus Occupation: Chemical Technicians (19-4031)
Associated Occupation: Materials Scientists (19-2032)

Tools and Technologies	Exclusivity
Chemical evaluation instruments and supplies	10
Computers	1
Content authoring and editing software	1
Data management and query software	1
Electrical measuring and testing equipment	7
Electrochemical measuring instruments and accessories	9
Electronic and communication measuring and testing instruments	14
Fluid mechanics equipment	11
Geophysical and geotechnical instruments	23
Heating equipment and parts and accessories	19
Indicating and recording instruments	2

Industry specific software	1
Information exchange software	1
Laboratory boring and grinding and cutting and crushing and pressing equipment	27
Laboratory decanting and distilling and evaporating and extracting equipment and supplies	19
Laboratory electron and solid state physics equipment	29
Laboratory enclosures and accessories	17
Laboratory furnaces and accessories	26
Laboratory mixing and stirring and shaking equipment and supplies	19
Laboratory ovens and accessories	15
Light and wave generating and measuring equipment	4
Liquid and gas flow measuring and observing instruments	15
Mechanical instruments	14
Spectroscopic equipment	10
Temperature and heat measuring instruments	6
Viewing and observing instruments and accessories	4
Vision protection and accessories	3
Weight measuring instruments	7

Not all positions in these occupations will necessarily use all of the listed tools and technologies. The exclusivity rating is an indication of how unique the tool or technology is amongst all occupations. The maximum rating is 100. High scores indicate that only a small number of occupations use that tool or technology.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.